THE SCOTTISH ANTARCTIC EXPEDITION.

We print herewith the last communication received from the Scottish Antarctic Expedition:

STANLEY, FALKLANDS,
ANTARCTIC SHIP SCOTIA, *January 24, 1903.*

DEAR SIR: I beg to acknowledge, with thanks, receipt of your esteemed favor of November 6 last and the copies of the MONTHLY WEATHER REVIEW. Please convey to the Chief of Bureau my best thanks for his gift. We leave here to-morrow for the Weddell Sea,[1] pushing south along the thirtieth parallel of west longitude and wintering in the ice. We do not expect to return here before February or March of next year. I hope to be able to contribute something to your magazine. We shall concentrate on kite work as much as circumstances permit, and have a complete outfit of meteorographs, kites, etc., on board. There is, we believe, some possibility of the ink freezing, as we have not the new ink, containing tonsol, on board.

(Signed) R. C. MOSSMAN,
Meteorologist.

[1]The southern extremity of the South Atlantic, explored by Captain Weddell about 1820.

THE CLIMATES OF GEOLOGICAL AGES.

One of the most interesting branches of climatological study consists in the effort to reason backward from the known climates of various portions of the world in the present epoch to what those climates must have been in earlier ages, when animals and plants differed somewhat from those of to-day. This study involves quite as much geology as meteorology, and is not likely to be solved without a due regard to both these elements. The latest contribution consists in a broad treatment of the subject by Professor Dr. Fritz Frech, of Breslau, who has considered the geological and paleontological conditions that must be satisfied, and shows plainly how our present ignorance of many points prevents logical argumentation on the subject. In conclusion he says:

It scarcely needs to be stated that I am far from considering the problem of the distribution of heat in past geological ages as solved by the present studies. Whoever has busied himself for many years with the reconstruction of the ancient oceans and continents will best know how great are the gaps in our knowledge of this subject and what surprises are in store for us; for instance, as the results of that research in the antarctic regions which is just now beginning. I have discussed the purely physical side of the problem and can easily imagine that further modifications are possible; that, for instance, there exist still other relations between the enormous eruptions of masses that sometimes cover whole continents and the changes in the cilmatic temperature. But I consider it certain that there is a parallelism between the maxima of terrestrial temperatures and the maxima of volcanic activity, and that there is a simultaneity between the glacial epochs and the minima of eruptive activity. The general conclusions are as follows:

1. The question as to the origin of the prevailing warmer climates in the geological past can not be separated from the problem of the glacial epochs.
2. The variations in the percentage of carbonic acid gas in the atmosphere afford the physical explanation for the differences of the warmer and colder climates in the geological past; a higher percentage of carbonic acid gas corresponds to a higher temperature.
3. Since carbonic acid gas is consumed by organic and chemical processes, therefore, volcanic exhalations constitute the only source to counterbalance this consumption.
4. Consequently, through all geological time a diminution of eruptive activity corresponds to a diminution of carbonic acid gas and a fall of temperature; such a fall of temperature twice produced a glacial epoch; namely, at the end of the paleozoic epoch and at the beginning of the present geological epoch. Every maximum of volcanic eruptions corresponds to a clearly observable rise in temperature.
5. Independent of this factor, that influences the climate of the whole earth, are the distribution of land and water, as also the consequent direction of the currents of wind and ocean, which are of great importance in determining the character of the climate.
6. On the other hand, the uniform warm climate that has prevailed during by far the greater number of geological periods can not be explained by any other distribution of the quantity of heat that we now receive.
7. All the older periods of the earth's history up to the end of the carboniferous found a warm climate fairly uniformly distributed over the earth.
8. After the close of the carboniferous period there occurred a glacial period that was principally developed in the Southern Hemisphere, but of which there are also indications in the Northern and which soon disappeared again.
9. After the consequences of this glacial epoch had been gradually overcome there again prevailed during the first two-thirds of the middle age of the earth, a uniformly tropical and subtropical climate in the central and upper dyas (or Permian strata.) From the upper Jura onwards, but especially in cretaceous times a division in the climatic zones was formed.
10. Two periods of the maximum of eruptions at the beginning and in the middle of the tertiary epoch correspond again to maxima of temperature.
11. The diminution of eruptions in the last portion of the tertiary epoch runs parallel with the diminution of heat; the glacial epoch (precisely as in the case of the paleozoic cold period) is to be recognized by an almost perfect cessation of eruptive activity, but the present epoch, by a renewed activity.

THE WEATHER OF THE MONTH.

By W. B. STOCKMAN, Forecast Official, in charge of Division of Records and Meteorological Data.

CHARACTERISTICS OF THE WEATHER FOR JANUARY.

During January, 1903, the temperature was normal in the lower Lake region; slightly below in the South Atlantic States, east Gulf States, the Ohio Valley and Tennessee, and the middle Pacific district; elsewhere it was above normal, and in the majority of these districts the mean daily excess was much more marked than in the regions where the departures showed a deficiency.

The precipitation was considerably above normal in the Florida Peninsula, and slightly above in North Dakota, the middle Plateau region, and the middle Pacific district; elsewhere it was below normal, the departures, however, amounted to less than 1 inch, except in the Ohio Valley and Tennessee where it was —1.9 inches.

The relative humidity was normal in the Middle Atlantic, South Atlantic, and west Gulf States, the Ohio Valley and Tennessee, upper Lake region, and the north Pacific district; slightly below in New England, the east Gulf States, North Dakota, the southern Plateau region, and the south Pacific district, and slightly above normal in the remaining geographical districts.

The cloudiness was slightly below the average in New England, the Missouri Valley and middle Plateau region, and above the average in the remaining districts. the departures, however, not being very marked, except in the Florida Peninsula, and the north Pacific, and middle Pacific districts.

PRESSURE.

The distribution of monthly mean pressure is shown graphically on Chart VI and the numerical values are given in Tables I and VI.

The area of highest mean atmospheric pressure overlay the northern and middle Plateau regions, and northern and west-central California. Another area of somewhat lower mean pressure overlay the central Gulf States, and south-central Tennessee. The lowest means were in northern New England. The pressure was slightly above normal in the Rio Grande Valley and thence northwestward to southeastern Washington and the California coast; elsewhere it was below normal, and over the greater portion of the area of deficient pressure the departures were quite decided and were most marked in parts of the Lake region.

The mean pressure for January, 1903, increased slightly over that of December, 1902, generally west of the one hundred and fifteenth meridian. To the eastward of said meridian it